

## RESEARCH, TECHNOLOGY, AND DATA

Surveillance—the ongoing, systematic collection, analysis, and interpretation of health-related data—is critical to every aspect of public health research. By tracking diseases and injuries, surveillance systems help define the burden of disease and disability, identify the populations most at risk, and shape effective prevention efforts.

CDC supports various surveillance efforts by setting common standards, providing technical guidance to states and other partners, testing and developing new statistical methods for interpreting data, and identifying data gaps that can be addressed through improved or expanded surveillance. Through registries, reporting, and surveys, these systems cast a wide net to capture data on items as varied as occupational and work-related injuries, vaccine-preventable diseases, births, deaths, health status, access to healthcare, behavioral risk factors, and cancer incidence. Many of these surveillance systems function as an early warning system for new or emerging conditions, highlighting their usefulness as prevention tools. Others help monitor trends in existing conditions, or—best of all—are able to document some of public health’s greatest successes, such as the elimination of polio and indigenously acquired measles from the United States.

As in other sectors, technology has revolutionized the potential of these systems. For example, automation has allowed increased accuracy and volume, while dramatically reducing time lags for both reporting and data retrieval—in many cases, from days or weeks to minutes or seconds. Several CDC surveillance initiatives are designed to apply new technology to speed communication of urgent public health information among public health officials and healthcare providers, while maintaining high security standards to protect confidentiality of sensitive health-related data.

Aided by new technology and sophisticated analytic techniques, CDC’s surveillance systems help collect and filter voluminous health-related information so that researchers and program designers can act decisively to prevent future cases of the diseases, injuries, and disabilities we track today.

## 122 CITIES MORTALITY REPORTING SYSTEM

### WHAT IS THE PUBLIC HEALTH ISSUE?

The Asian influenza pandemic of 1957 prompted CDC to develop weekly reporting and monitoring of pneumonia and influenza deaths by cities to rapidly assess the size, timing, and geographic distribution of epidemics. The high rate of person-to-person influenza transmission and the genetic diversity of the influenza virus over time require constant vigilance. Today, influenza continues to cause substantial morbidity and mortality. Since 1962, CDC has managed the 122 Cities Mortality Reporting System as part of its national influenza surveillance effort. The system provides weekly mortality data reported voluntarily from selected cities across the United States. Information regarding the mortality impact of various strains of influenza is used to help formulate each year's vaccine.

### WHAT HAS CDC ACCOMPLISHED?

Weekly data regarding pneumonia and influenza deaths from the 122 Cities Mortality Reporting System are published in the *Morbidity and Mortality Weekly Report*. During each influenza season, CDC uses these data to monitor the numbers of pneumonia and influenza deaths (deaths for which influenza and/or pneumonia are mentioned as contributing factors or are identified as the underlying cause) in the United States. CDC evaluates these data to assess the severity of influenza epidemics. Since mortality data from the National Vital Statistics System, which tracks births and deaths in the United States, do not become available until at least 10 to 12 months after an influenza epidemic, the 122 Cities Mortality Reporting System provides more timely information for public health action.

#### *Example of Program in Action*

During the 2002–2003 influenza seasons, the 122 Cities Mortality Reporting System data were presented in CDC's Weekly Influenza Activity Report, which also incorporates information from other influenza surveillance activities, to present a timely and comprehensive picture of influenza activity in the United States. Information regarding current influenza trends is disseminated to healthcare providers and the public through national print, radio, and television news media to guide disease prevention efforts. Additionally, during the second quarter (April–June 2003), CDC program staff updated and distributed the 122 Cities Mortality Report System surveillance and reporting training materials to city vital registration staff. A Second Quarter Reporters' Update provided information on the use of the data and outlined steps to ensure the timeliness, accuracy, and completeness of the data.

### WHAT ARE THE NEXT STEPS?

The quality of CDC influenza and pneumonia mortality data will continue to improve as new developments in reporting systems, including electronic death registration systems and revised standard death certificates, are implemented. CDC's plans include

- Facilitating weekly Web-reporting through the Internet via the secure data network.
- Collaborating with state epidemiologists/registrars to ensure timely reporting from cities within their jurisdiction.
- Improving collaboration with vital statistics reporters to maintain voluntary participation through teleconferences and regular feedback.
- Evaluating new information technologies aimed at improving the coverage, quality and timeliness of 122 Cities Mortality Reporting System mortality data in support of health promotion and disease prevention.

For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)

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## BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

### WHAT IS THE PUBLIC HEALTH ISSUE?

Health tracking, or “surveillance,” is the essential underpinning for all public health efforts. State-level data on behavioral risk factors are essential to efficiently and effectively target scarce public health prevention resources. States use such data to identify health problems, plan and evaluate public health responses, and target populations with the greatest needs. In addition, states need to be able to identify public health trends over time. For example, one way CDC was able to alert public health programs to the obesity epidemic was through the use of Behavioral Risk Factor Surveillance System (BRFSS) data.

### WHAT HAS CDC ACCOMPLISHED?

BRFSS is the nation’s premier system for measuring critical health problems and a wide variety of health-related behaviors in the U.S. population. The data underpin many public health policy and program decisions in states and for the nation. BRFSS is a cross-sectional telephone survey conducted by state health departments, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. States collect and use BRFSS data to track critical health problems and to develop and evaluate public health responses. CDC provides technical assistance to participating states and territories. BRFSS is the primary source of information (for many states it is the only source) on risk behaviors that contribute to the leading causes of death among adults. It is a unique, state-based surveillance system active in all 50 states, and it is the largest telephone-based surveillance system in the world.

BRFSS provides flexible, timely, and ongoing data collection that allows for state-to-state and state-to-nation comparisons and is flexible to meet individual state needs. BRFSS data can also be analyzed by age, sex, education, income, race, ethnicity, and other variables so that states can identify groups at highest risk for health problems and tailor efforts accordingly. Recognizing the value of BRFSS, other countries, including Canada, Russia, and Australia, have turned to CDC for assistance in establishing similar systems for their populations. In 2003, CDC collaborated with state and local health officials to make health information from BRFSS available for specific local areas (“SMART—Selected Metropolitan/Micropolitan Area Risk Trends from the Behavioral Risk Factor Surveillance System.”) This analysis provided data for 98 metropolitan and micropolitan statistical areas and many of the counties within those areas.

#### *Example of Program in Action*

New York uses data on the prevalence of regular consumption of whole milk to guide the state’s Low Fat Milk campaign. Maryland used BRFSS data to determine priorities for *Healthy Maryland 2010*. Following the 1995 bombing in Oklahoma City, health department staff analyzed questions on stress, nightmares and feelings of hopelessness in order to better address the psychological impact of the disaster. In Arkansas, BRFSS data assessing the correlation between physical activity and hypertension among black women have been used to target special intervention and education programs.

### WHAT ARE THE NEXT STEPS?

CDC will continue to support state-level monitoring of emerging health problems and health-related behaviors through BRFSS. The role of BRFSS in public health planning will continue and grow as increasingly sophisticated methods of data collection and analysis make possible new and additional uses of BRFSS, such as local area analysis.

For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)

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## CDC ASSESSMENT INITIATIVE

### WHAT IS THE PUBLIC HEALTH ISSUE?

The 2002 Institute of Medicine Report “The Future of the Public’s Health in the 21<sup>st</sup> Century” identified a need for greater assessment capacity at the federal, state, and local levels. Assessment is defined as the regular, systematic collection, assembly, analysis, and dissemination of information on the health of a community. Such information is critical in determining community health problems, trends in the occurrence of these problems, and reasons for their occurrence. This information is also used to establish priorities and drive public health policy development and decision making.

### WHAT HAS CDC ACCOMPLISHED?

In 1992, CDC began funding states to develop new systems and methods to improve how data are used in the public health policy- and decision-making process. Since that time, CDC has entered into cooperative agreements with 15 states (FL, IA, ME, MA, MN, MO, NM, NY, NC, OH, OR, RI, TX, UT, and WA) to

- Improve community access to health data and information.
- Develop epidemiologic skills in the public health workforce to support accurate interpretation and understanding of data.
- Design systematic approaches to developing and evaluating community health assessments at the local level.
- Form partnerships with managed care organizations and Medicaid agencies to link disparate data sets, thus increasing their utility.

In 2003, in coordination with state partners, CDC sponsored the Fourth Assessment Initiative Conference, drawing on expertise from state and local health departments, federal agencies, universities, and public health organizations nationwide to share information on promising practices to improve assessment capability.

#### *Example of Program in Action*

Through the Assessment Initiative, the New York State Department of Health developed an evaluation tool to rate the overall completeness and usability of community health assessments (CHAs) completed by local health departments (LHDs). The results of this evaluation were shared with the staffs of 125 LHDs in four facilitated feedback sessions to compare state and local perspectives on characteristics of an effective CHA. Other goals included strengthening the statewide guidance and format for completing a CHA; identifying public health workforce training needs; and providing a baseline against which future CHA quality evaluations can be compared. One outcome of this process was the development of an electronic CHA Clearinghouse designed to share examples of promising practices employed by LHDs, CHA data sources/tools, and links to evidence-based community health practices. The clearinghouse is available as a resource to all public health agencies at [www.health.state.ny.us/nysdoh/chac/index.htm](http://www.health.state.ny.us/nysdoh/chac/index.htm).

### WHAT ARE THE NEXT STEPS?

In the future, CDC’s Assessment Initiative will focus on

- Producing widely applicable knowledge on effective assessment methods and practices that can be shared amongst all states.
- Supporting the evaluation and sustainability of innovative systems and methodologies to enhance assessment capacity.

*For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)*

*January 2004*

## ENVIRONMENTAL HEALTH SURVEILLANCE SYSTEMS

### WHAT IS THE PUBLIC HEALTH ISSUE?

- About 40,000 hazardous waste sites have been reported to the federal government. Additionally, thousands of unplanned releases of toxins into the environment occur each year.
- More than 1,600 hazardous waste sites are included on the National Priorities List (NPL) and are targeted for clean up by the Environmental Protection Agency. About 15 million people live within 1 mile of NPL sites.
- A broad range of adverse health effects—from birth defects to chronic diseases such as cancer, multiple sclerosis, or lupus—are increasingly being linked to exposure to environmental contamination.

### WHAT HAS ATSDR ACCOMPLISHED?

The Agency for Toxic Substances and Disease Registry (ATSDR) performs environmental health surveillance via the National Exposure Registry and the Hazardous Substances and Emergency Events Surveillance (HSEES) system. ATSDR initiated HSEES in 1990. ATSDR maintains the active, state-based HSEES system to describe the public health consequences associated with the release of hazardous substances. In 2003, 15 states participated in HSEES.

In 2002, ATSDR published a report summarizing the findings of the surveillance for the 2-year period from 1999 through 2000. This report included information on 13,808 hazardous substance events and 4,425 injured persons (74 of whom died).

Participating states used the 1999–2000 data analysis to identify and implement prevention outreach activities that were geared to preventing spills, releases, and resulting injuries. Prevention activities have included developing fact sheets, reports, posters, presentations, websites, news articles, and journal articles. These activities were focused on counties and industries (e.g., chlorine users, transportation, agricultural industries) with the most frequent spills, and the most frequently spilled chemicals (i.e., ammonia, chlorine, mercury, pesticides, and illicit methamphetamine chemicals). Other prevention activities have targeted population groups that are frequently injured, such as employees, first responders, and students.

### WHAT ARE THE NEXT STEPS?

Developing the HSEES system's capabilities to enable users' access via the Internet is a primary focus. ATSDR is working with the Pew Environmental Health Commission and other public health professionals to offer solutions to surveillance challenges cited in Pew's 2000 report, *America's Environmental Health Gap*.

## EPI INFO

### WHAT IS THE PUBLIC HEALTH ISSUE?

Public health practitioners around the world rely on various tools to help them rapidly assess disease outbreaks. Without the ability to quickly identify patterns and frequency of health events in a population, public health practitioners are unable to effectively offer preventive measures. *Epi Info*, a set of software tools for epidemiologists and other public health staff, enables rapid, effective management and analysis of data collected in the field in response to public health problems and emergencies. In recent years, *Epi Info* has been used to prepare public health practitioners for responding to biological, chemical, radiological, and other mass-trauma events related to terrorism.

### WHAT HAS CDC ACCOMPLISHED?

*Epi Info* can be used to design questionnaires, manage data, and produce graphs, line lists, maps, tables, and epidemiologic statistics. The World Health Organization extensively uses *Epi Info*, and promotes it as a valuable surveillance and investigation tool to the international community. *Epi Info* runs on either of two operating systems (DOS and Windows) and is distributed free in the public domain from the CDC website (see [www.cdc.gov/epiinfo/downloads](http://www.cdc.gov/epiinfo/downloads)).

- About 145,000 copies of the *Epi Info* DOS version program are in use worldwide, and about 12,000 copies of the newest Windows version *Epi Info 2000* are downloaded from the CDC website site each month.
- *Epi Info* is used in 181 countries, including remote parts of the world, with translations in 14 languages.
- In 2003, increased training opportunities, including onsite training courses, were offered to public health partners in New Jersey, New York, Ohio, San Diego, and Vermont. Many of these training courses help public health practitioners use *Epi Info* for terrorism preparedness at the state and local levels.
- *Epi Info* collaborations within CDC have assisted in the development of new modules and surveillance management systems most appropriate to each locality for supporting international public health needs.
- In 2003, a two-phase evaluation of *Epi Info* began and will deliver stakeholder and user feedback to guide future improvements of *Epi Info*.

### Example of Program in Action

Since 2000, Wyoming's Office of Emergency Medical Services has used *Epi Info* to track emergency dispatches. The *Epi Info* tracking system provides Wyoming with critical data regarding the efficiency of responding to an emergency situation and the skills needed by emergency personnel.

### WHAT ARE THE NEXT STEPS?

- In 2004, *Epi Info* plans to release a new version that contains enhanced capabilities for mapping, graphing, and statistics, built around the Microsoft Access database format.
- A new tool will come with the software: *Epi Report*. *Epi Report* was developed in collaboration with CDC partners and offers reporting capabilities, streamlining information analysis, and presentation tools.
- Enhancements are underway to improve the current *Epi Info* version addressing existing software challenges of the system. All versions of *Epi Info* will continue to be supported and maintained as improvements are made with guidance from a stakeholder and user evaluation of the software.
- CDC plans to increase *Epi Info* training opportunities for public health practitioners related to terrorism preparedness and traditional surveillance to meet the growing demand from the state and local level.

## EPIDEMIC INFORMATION EXCHANGE

### WHAT IS THE PUBLIC HEALTH ISSUE?

The urgency of outbreaks, terrorist events, toxic exposures, and other acute public health events underscores the critical need for a reliable and accurate communications tool that supplies public health officials with up-to-the-minute reports, alerts, discussions, and assistance. A secure, Web-based communications network for public health investigation and response simplifies and expedites the exchange of routine and emergent public health information among CDC and other health agencies.

### WHAT HAS CDC ACCOMPLISHED?

In December 2000, CDC launched the *Epidemic Information Exchange (Epi-X)* as the nation's secure, Internet-based communications network for public health investigation and response. *Epi-X* provides public health officials throughout the United States with up-to-the-minute information, reports, alerts, and discussions regarding terrorist events, toxic exposures, disease outbreaks, and other public health events. When public health officials post reports to *Epi-X*, the information is shared rapidly with colleagues across many states and jurisdictions. This sensitive information is encrypted and secured from access by outside sources. Since its launch, *Epi-X* has posted over 2,400 reports of disease outbreaks, other new public health activities, and requests for epidemiologic assistance from CDC. As of August 2003, more than 1,800 federal, state, and local epidemiologists, laboratorians, and other designated health scientists use *Epi-X* in such capacities as

- Finding, notifying, and communicating instantly with colleagues and specialists regarding urgent public health events across a secure, encrypted, Intranet-based network.
- Creating reports to track information for outbreak investigations and response.
- Creating online conferences to disseminate and discuss topics such as terrorism response, anthrax investigations, and West Nile virus activity.
- Researching outbreaks and unusual health events through a flexible search interface.
- Alerting health officials by pager, phone, and e-mail of urgent events.
- Customizing their home Internet pages, information, and options to meet their specific needs.
- Requesting assistance to investigate epidemics from CDC online.
- Communicating simultaneously with command centers at the Department of Health and Human Services and CDC, as well as all state and large metropolitan terrorism response programs.

### WHAT ARE THE NEXT STEPS?

*Epi-X* is expanding secure public health communications capacity at the national level. To reach its full potential, *Epi-X* must increase the base of designated users to ensure rapid secure communications at all levels of the public health and safety workforces. CDC plans to integrate *Epi-X* more closely with disease monitoring systems, provide improved secure communications for response teams in the field, and provide intelligence regarding international outbreaks that might affect public health in the United States.

## EXPOSURE AND DISEASE REGISTRIES

### WHAT IS THE PUBLIC HEALTH ISSUE?

- About 40,000 hazardous waste sites have been reported to the federal government. Additionally, there are thousands of unplanned releases of toxins into the environment each year.
- More than 1,600 hazardous waste sites are included on the National Priorities List (NPL) and are targeted for clean up by the Environmental Protection Agency. About 15 million people live within 1 mile of NPL sites.
- Exposure registries offer a way to catalog health effects that might be associated with exposure to substances.

### WHAT HAS ATSDR ACCOMPLISHED?

The Agency for Toxic Substances and Disease Registry (ATSDR) created the National Exposure Registry (NER), which records and follows reported health information from persons with documented exposures to specific hazardous substances. The information is collected according to chemical-specific registries. These registries are designed to aid in assessing the long-term health consequences of low-level, long-term exposures to hazardous chemicals identified at hazardous waste sites. NER consists of four established registries: Trichloroethylene, Dioxin, Trichloroethane, and Benzene. Registrants on all four registries have reported increases of such problems as anemia, other blood disorders, and urinary tract disorders. Other conditions that appear on at least three of the registries include skin rashes, eczema, other skin allergies, and stroke. ATSDR shares registry information with participants so that they can make informed decisions about their health. ATSDR also analyzes information gathered from the exposure registries to identify opportunities for future health studies. For example, analysis of the approximately 5,000 female registrants across all registries revealed a statistically significant increase in several conditions, such as diabetes, kidney problems, liver problems, and urinary tract disorders.

### WHAT ARE THE NEXT STEPS?

To date, 666 workers and 1,765 household contacts that are still living have been identified. ATSDR is in the process of expanding the NER website to include all NER publications and the information collected for NER (without personal identifiers) to allow other researchers the opportunity to use the data in their own research. ATSDR will continue to work with the current registries, expanding the number of participants as appropriate.

ATSDR is investigating the formation of disease registries to facilitate the identification and evaluation of specific health outcomes (e.g., multiple sclerosis, Parkinson disease) that might be associated with exposure to hazardous substances in the environment. In 2002, ATSDR began a tracking project to locate and determine the vital status of former workers of industry sites where exposures have been recorded. To date, 666 workers and 1,765 household contacts that are still living have been identified. For example, ATSDR is developing a Tremolite Asbestos Registry for people who were exposed to tremolite asbestos (a type of asbestos that contaminated vermiculite mined in Libby, Montana). The registry will include former vermiculite workers in Libby, their household contacts, and people who have participated in ATSDR's medical testing program in Libby. ATSDR will continue to help the New York City Department of Health and Mental Hygiene develop the World Trade Center Registry, which will follow the health of persons most exposed to the events and aftermath of the September 11, 2001, attack. ATSDR will strengthen its collaborations with the Pew Environmental Health Commission and other public health professionals to offer solutions to surveillance challenges cited in Pew's 2000 report, *America's Environmental Health Gap*.

For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)

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## EXTRAMURAL PREVENTION RESEARCH PROGRAM

### WHAT IS THE PUBLIC HEALTH ISSUE?

- Many of the nation's leading causes of premature death, disease, disability, and injury—including cancer, heart disease, asthma, suicide, and motor vehicle crashes—are preventable. These conditions are strongly affected by behavior, lifestyle, and the environment.
- Much is known about behaviors that affect health. However, far less is understood about how best to assist individuals and communities to establish and maintain healthful lifestyles and environments.
- Practitioners, policymakers, and communities often question whether research results and guidelines developed in other locales, using populations different from their own, are appropriate and affordable for their community.

### WHAT HAS CDC ACCOMPLISHED?

CDC is committed to funding high-quality public health research that makes the transition from basic research to practice. All research is initiated and proposed by researchers working in conjunction with communities to address local health priorities and concerns. All research projects also undergo peer review by expert researchers external to CDC to identify the highest quality proposals.

Through the first round of grants in 1999, CDC funded over 50 projects on topics such as asthma, traumatic brain injury, workplace safety, health disparities, heart disease, and violence. In 2002 and 2003, 26 more grants were funded from among 300 applications. This second round of grants was intended to stimulate investigator-initiated participatory research on community-based approaches to prevention. The participatory approach requires the researchers to engage practitioners, policymakers, and others in the community in defining the research questions of most importance to their community, as well as interpreting and applying the study findings in their own community.

#### *Example of Program in Action*

The University of Pennsylvania is evaluating the effects of a school-based nutrition policy initiative on the prevalence, incidence, and remission of overweight among mostly low-income, African-American middle school students. This community-based initiative seeks to change the school environment by supporting healthy eating, increasing physical activity, and decreasing the prevalence of overweight and diet-related diseases in children.

Community Health Workers (CHWs) are representing the Multnomah County Health Department in Portland, Oregon, and several community and academic partners in an effort to engage community members in a program to prevent priority health problems. The study will assess the role of CHWs and social capital in supporting the participatory process for community assessment and taking action on health concerns.

### WHAT ARE THE NEXT STEPS?

CDC and other public health organization programs are typically disease-specific, yet many research needs are similar across diseases and conditions. For example, poor living conditions can lead to violence among youth, learning problems in children who come to school hungry, and drug and alcohol abuse. The prevention research program, in addition to supporting research grants to deal with such cross-cutting issues, is also creating opportunities for broad-based dialogue and community input so that results of importance to more than one health condition are shared among all who might benefit from them.

## GEOGRAPHIC INFORMATION SYSTEMS

### WHAT IS THE PUBLIC HEALTH ISSUE?

- About 40,000 hazardous-waste sites have been reported to the federal government. Additionally, thousands of inadvertent environmental releases of toxins occur each year.
- More than 1,600 hazardous waste sites are included on the National Priorities List (NPL) and are targeted for clean up by the Environmental Protection Agency. About 15 million people live within 1 mile of NPL sites.
- There is a critical need to correlate the proximity of people to the geographic location of environmental hazards.

### WHAT HAS ATSDR ACCOMPLISHED?

A geographic information system (GIS) is a computer-based system that allows the layering of health, demographic, environmental, imagery, and other traditional data sources to be analyzed by their location on the earth's surface. A critical component of GIS is its capability to conduct complex spatial analyses to assist in public health decision making.

The Agency for Toxic Substances and Disease Registry (ATSDR) uses GIS technology to analyze data on population and topography (including roads, streams, and land elevation), as well as information gathered from residents. The data is used to track the spread of environmental contamination through a community, identify geographic areas of particular health concern, and identify susceptible populations (e.g., children, childbearing-aged women, the elderly, minority populations).

The GIS technology was used extensively in response to the terroristic attacks on the World Trade Center Towers in Manhattan on September 11, 2001. Some examples of GIS being used included mapping products such as building use (e.g., schools, residences, and businesses), identifying locations of completed environmental sampling, and providing daily updates of asbestos sampling to address local health concerns. ATSDR staff also used GIS technology to plot locations where anthrax was found in anthrax-contaminated buildings.

### WHAT ARE THE NEXT STEPS?

ATSDR is expanding the field applications for public health emergency preparedness and response. The agency is continuing to develop Internet-based applications linking public health professionals to large data warehouses for public health research and planning. Through collaborations with other federal, state, and local agencies, ATSDR is working to build the capacity for use of this tool in public health applications at all levels.

## GUIDE TO COMMUNITY PREVENTIVE SERVICES

### WHAT IS THE PUBLIC HEALTH ISSUE?

- Science-based advice regarding effective intervention programs is lacking for many public health problems.
- Resources for public health programs are scarce, requiring that the most-effective interventions be implemented.
- With no gold-standard for effective public health interventions, the United States sometimes spends millions on interventions that do not work and fails to fund interventions that could save lives.

### WHAT HAS CDC ACCOMPLISHED?

In response to the need for information concerning successful ways to improve public health, CDC convened the independent, nonfederal Task Force on Community Preventive Services to examine existing scientific studies and make recommendations. CDC provides scientific support to the Task Force by reviewing thousands of scientific papers to identify relevant studies; evaluating the quality of those studies and summarizing their results; translating evidence into practical recommendations; reporting the findings; and working with diverse partners to ensure implementation of recommended policies and programs. The Task Force findings and recommendations are published in the *Morbidity and Mortality Weekly Report Recommendations and Reports* series and the *American Journal of Preventive Medicine*; the recommendations are also posted on the Community Guide website. As of September 2003, over 80 published findings have been released, and the Community Guide is increasingly viewed as a population-based counterpart to the *Guide to Clinical Preventive Services* and recognized as the pre-eminent resource for effective information regarding population based-preventive services (e.g.; policies, programs, healthcare systems strategies). The first volume of completed topics will be published by Oxford Press as the *Guide to Community Preventive Services*.

#### *Example of Program in Action*

Since 1999, CDC has published findings and recommendations on seven substantial and diverse public health problems: improving vaccination rates, reducing use of tobacco products, reducing motor vehicle occupant injuries, improving the care of persons with diabetes, increasing physical activity, improving oral health, and promoting healthy social environments. The findings have been used by partners at the federal, state, and local levels to improve public health programs and policies. For example, Congress has used the findings and recommendations regarding motor vehicle occupant injuries in its deliberations over reducing allowable blood alcohol limits for drivers. In addition, Blue Cross/Blue Shield and other insurance carriers have used findings to support the addition of tobacco-cessation benefits. In addition, a Community Guide review showing that standing order protocols for influenza and pneumococcal vaccinations for adults are effective in improving vaccination rates led the Center for Medicare and Medicaid Services to promote this intervention in Medicare-qualified long-term care facilities.

### WHAT ARE THE NEXT STEPS?

- CDC plans to broadly disseminate the *Community Guide* to ensure that information reaches a wide audience including public health professionals, students of public health, legislators, and other policymakers, who will take action to improve public health (e.g., implement public health policies, programs, laws, research, and funding).
- CDC will also conduct a national evaluation to examine the impact of the *Community Guide* and develop additional chapters in the *Community Guide* to address compelling needs for information.

## HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT OF 1996 PRIVACY RULE

### WHAT IS THE PUBLIC HEALTH ISSUE?

- The *Health Insurance Portability and Accountability Act (HIPAA) of 1996 Privacy Rule* (the rule) provides the first national standards for protecting the privacy of personal health information.
- The rule regulates how covered entities use and disclose certain individually identifiable health information, called protected health information (PHI).
- Public health practice and research, including traditional public health activities such as program operations, surveillance, evaluation, terrorism preparedness, outbreak investigations, direct health services, and public health research, use PHI to identify, monitor, and respond to disease, death, and disability among populations.
- Although the rule does permit disclosures of PHI for public health purposes, administrative requirements are associated with these disclosures that might hinder access to PHI by public health authorities.
- The complexity of the rule has resulted in differing interpretations of the regulation as it relates to public health; thus, coordination in the public health community is needed.

### WHAT HAS CDC ACCOMPLISHED?

In July 2002, a Privacy Rule coordinator was hired to oversee CDC's internal and partner education efforts concerning the effect of the rule on public health. During 2002–2003, this effort has resulted in

- Publication of a *Morbidity and Mortality Weekly Report* supplement titled: *HIPAA Privacy Rule and Public Health: Guidance from CDC and the U.S. Department of Health and Human Services* as well as the publication of a manuscript titled *Statutory Basis for Public Health Reporting beyond Specific Diseases*.
- Development of a CDC Intranet and Internet website dedicated to the rule.
- Sponsorship of a national satellite broadcast on the rule through Public Health Grand Rounds program.
- Development and implementation of a series of four forums for CDC employees and partners.
- Sponsorship of a Privacy Rule session at the second Annual CDC Public Health Law Conference.
- Development of a draft FAQ document concerning the rule and public health.
- Offering technical assistance to state and local partners in various forums including conference presentations, meeting participation, and written guidance.

### WHAT ARE THE NEXT STEPS?

These activities have placed CDC in a leadership position concerning the rule and public health. Next steps include documenting the effect of this regulation on public health, continued publication of journal articles addressing discreet issues related to the rule and public health, and establishing a privacy office at CDC to support and expand CDC's role in this area.

## MEDICAL EXAMINER AND CORONER INFORMATION SHARING PROGRAM

### WHAT IS THE PUBLIC HEALTH ISSUE?

The lack of uniformity in death investigation practices and the need for better distribution of death investigation data has hampered the availability, quality, and timeliness of death investigation information being used by the public health community and by other human resource programs. Medical examiners and coroners (ME/Cs) play critical roles in investigating sudden, unexplained, or violent deaths. These officials provide accurate, legally defensible determinations of cause of death in suspicious circumstances, which account for 20% of all deaths and include deaths that are of interest to public health personnel. The records of ME/Cs provide vital information regarding patterns and trends of mortality in the United States and other data important for public health studies and surveillance. To make this information more readily available, CDC established the Medical Examiner and Coroner Information Sharing Program (MECISP) in 1986.

### WHAT HAS CDC ACCOMPLISHED?

MECISP promotes improving public health and safety through sharing and using data from death investigations by ME/Cs to increase the effectiveness of intervention activities. Examples of information sharing are seen in the heat index criteria warnings for the public on safe temperatures for certain outdoor activities and the installation of safety locks in car trunks. Collaborations between ME/Cs and public health systems on epidemiologic studies of deaths routinely investigated by ME/Cs have aided in establishing protocols for determining deaths most likely to be caused by terrorism agents.

#### *Example of Program in Action*

In 2000, the New Mexico Office of the Medical Investigator developed and implemented a protocol to enhance infectious disease surveillance, emphasizing the detection of deaths likely to be caused by a critical terrorism agent. Positive autopsy findings are immediately reported to the appropriate public health authorities for further action. In its first year, 76 deaths meeting their criteria yielded an organism-specific diagnosis. Of those identified, 47% were notifiable infectious disease conditions in New Mexico, including tuberculosis, botulism, and invasive *Streptococcus pneumoniae* disease. A notifiable infectious disease requires regular, frequent, and timely information concerning individual cases in order to prevent and control that disease.

### WHAT ARE THE NEXT STEPS?

Partnerships between ME/Cs and state and local health departments hold great promise for reporting cases or clusters of unusual deaths, including those caused by biological or chemical terrorism. In the future, CDC plans to

- Publish and distribute a guidebook for state and local ME/Cs outlining their role in terrorism-associated surveillance and case management.
- Publish guidance on the assessment of ME/C-based information systems and mechanisms to support information exchange between ME/Cs and public health agencies.
- Implement and evaluate surveillance demonstration projects in selected ME/C sites to assess the added value of ME/C-based surveillance to enhance public health preparedness and response.

## MINING RESEARCH

### WHAT IS THE PUBLIC HEALTH ISSUE?

- In 2002, coal mining had a worker fatality rate that was more than seven times the national average.
- The median number of lost days per mining injury is nearly three times higher than that observed for all private industry nationally.
- From 1990 to 2000, black lung disease was an underlying or contributing cause of about 16,000 deaths in the United States, including 950 deaths in 2000.
- Nearly one quarter of all deaths from silicosis are attributed to mining.
- About 90% of miners are hearing-impaired by age 65.
- From 1995 to 2002, there were 142 ground support and 230 powered haulage-related fatalities in mining.

### WHAT HAS CDC ACCOMPLISHED?

CDC conducts a research program to address safety and health issues among miners that focuses on areas identified as critical by constituents and surveillance data, including hearing loss prevention, dust monitoring and control, injury prevention, and rock fall prevention.

#### *Examples of Program in Action*

- CDC is partnering with several surface and underground mines to assess ergonomic risk factors in mining. Ergonomic interventions are being developed, implemented, and evaluated to prevent slips and falls while mounting and dismounting vehicles and to prevent jolting and jarring injuries to mobile vehicle operators.
- To reduce worker exposure to coal mine dust, CDC in partnership with manufacturers, labor, and industry, developed a Personal Dust Monitor. It provides real-time exposure data during a shift and allows for corrective action before overexposures occur.
- CDC partnered with manufacturers, and developed five innovative roof support systems that, unlike the traditionally used heavy and bulky timber blocks, can be extended to different lengths to provide controlled, sustainable roof support at a range of operating heights, while also reducing material handling efforts.
- CDC developed a hearing-loss simulator that demonstrates the life-changing effects of noise-induced hearing loss and helps motivate workers to take simple preventive actions.

### WHAT ARE THE NEXT STEPS?

Mining poses many occupational safety and health challenges for the future. Dust and noise exposures in mining remain unacceptably high and better controls in both areas must be developed. Mines are expected to become larger and deeper, intensifying the need for a better understanding of rock behavior in these new conditions. The mining workforce is approaching an average age of 50 years in many industry segments. The needs of older workers must be accommodated, and young replacement workers must be properly trained if injury rates are to be reduced. Effective surveillance, prevention, and control programs, carried out in collaboration with industry, labor, and other governmental agencies, are necessary to ensure the best possible safety and health outcomes for miners. CDC is working on all these fronts to continue to have a positive impact on the safety and health of the mining workforce.

## MORBIDITY AND MORTALITY WEEKLY REPORT

### WHAT IS THE PUBLIC HEALTH ISSUE?

Communicating to the public infectious disease surveillance data, public health recommendations, and information regarding terrorism preparedness has always been the province of CDC and the *Morbidity and Mortality Weekly Report (MMWR)*. Such reports, from a highly respected, trustworthy source, are of paramount importance to public health practitioners. Providing that information in the most expedient manner is critical. In today's world of rapid communications, providers must be able to access accurate, well-researched, and reliable information concerning disease trends. Public health officials have a compelling need for reliable recommendations that direct the response to disease outbreaks or other events, and that educate them regarding investigations and proven practices in the field of disease and injury prevention and control.

### WHAT HAS CDC ACCOMPLISHED?

*MMWR* is the voice of CDC and is an internationally respected publication that is the cornerstone of public health reporting in the United States. Recognized as CDC's official method for recommending preventions and treatments, *MMWR* also provides clinicians and public health practitioners with guidance related to terrorism preparedness and response; infection control practices and investigations; and disease and injury surveillance and news. *MMWR* is available on the Internet ([www.cdc.mmwr](http://www.cdc.mmwr)) and distributed in paper and electronic format through the Internet and the *MMWR* distribution network. *MMWR* reaches over 2 million readers annually through the *MMWR* website, 805,000 subscribers to major medical journals, and 5,000 hospitals. Of physicians who belong to medical specialty organizations, 95% receive *MMWR*, as do state and local health departments.

#### *Example of Program in Action*

As the United States was recovering from the anthrax attacks in 2001, *MMWR* recognized its own value in such situations, as well as the public's need for immediate information. In three critical public health events in 2002–2003 (West Nile virus, Severe Acute Respiratory Syndrome, and monkeypox), *MMWR* responded to the need for rapid dissemination by implementing the *MMWR Dispatch*. The *Dispatch* is an electronic rapid-release publication that can provide its audience with vital public health information in an expedited process, ensuring that *MMWR* could be published at any time in a public health emergency. In addition, *MMWR* has initiated a Web-based *MGuide*, which compiles weekly summaries on articles of current public health interest. In the past year, *MMWR* has also provided user-friendly Quick Guides (e.g., Childhood Immunization Schedule) for specific audiences.

### WHAT ARE THE NEXT STEPS?

*MMWR* will maximize its ability to publish ahead of print and will expand its publishing capability to other sites. It will also expand its influence on the nation's health by launching an additional series of reports focusing on lesser-known CDC areas of interest. The publication will increase readership through other venues that have proven successful in the past (e.g., continuing education), and *MMWR* will continue to evaluate its effect on research and clinical and public health practice.

For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)

January 2004

## NATIONAL OCCUPATIONAL RESEARCH AGENDA

### WHAT IS THE PUBLIC HEALTH ISSUE?

- In 2002, more than 5,500 workers were fatally injured at work, an average of 15 each day. In addition, over 4.7 million workers sustained nonfatal injuries and illnesses in the private sector alone.
- The direct costs of occupational injuries and illnesses were estimated to be \$45.8 billion in 2001 (2003 Liberty Mutual Workplace Safety Index). The indirect costs were estimated to be an additional \$137.4 to \$229 billion.

### WHAT HAS CDC ACCOMPLISHED?

In 1996, CDC and its outside partners established the National Occupational Research Agenda (NORA), a framework to guide occupational safety and health research through the next decade. The NORA process resulted in a remarkable consensus about the top 21 occupational safety and health research priorities. NORA is an agenda not only for CDC, but for the nation as a whole. Through the impetus of NORA, CDC has energized occupational safety and health research, leveraged resources of other federal agencies to support NORA, pursued an active program of intramural and extramural research, and developed new research partnerships with stakeholders. NORA continues to be an innovative, multi-disciplinary national research agenda built on strong partnerships with public, private, and nonprofit organizations and continues to be modeled at the local, state, national, and international levels.

#### *Examples of Program in Action*

- As a result of NORA, CDC has increased its overall investment in extramural research and has leveraged funding from other federal agencies for occupational safety and health research. CDC has many effective partnerships including collaboration with a nursing home company, lift device manufacturers, universities, and employers to develop and evaluate an injury prevention program that reduced the incidence, severity, and cost of low-back and other musculoskeletal injuries to workers in nursing homes. Nursing homes have the highest overall injury rate of all health services industries, while nursing aides, orderlies, and attendants are the highest risk occupations for low-back pain among female workers, with almost 270,000 reported cases yearly. The partners received the NORA Partnering Award for Worker Safety and Health.
- The NORA Symposium, “Working Partnerships—Research to Practice” conference brought together nearly 250 researchers and stakeholders from the private and public sectors to discuss new findings and partnering opportunities related to the NORA target areas. Scientific presentations addressing NORA priorities were an important aspect of this conference, providing a unique forum for a broad cross-section of the occupational safety and health community to learn about the research conducted during 7 years of NORA.
- The *2003 NORA Update*, the latest in a series of bulletins under this title, provides the latest on NORA-related research efforts including a timeline of NORA events, newly published documents related to the NORA priority areas, upcoming NORA workshops, and special NORA research initiatives.
- The *NORA Compendium of Research* was released at the NORA 2003 Symposium and contains summaries of current research projects supported through NORA; 448 projects are classified by NORA priority area.

### WHAT ARE THE NEXT STEPS?

The development of NORA was only the first step in an ongoing effort between CDC and its many partners to guide occupational safety and health research into the future. As the impact of NORA continues to grow, the nation is better positioned to address the toll of workplace injury and death. Through NORA, CDC will build on existing successes by broadening partnerships in occupational safety and health research; expanding efforts to collaborate with other federal agencies; and targeting new research initiatives to ensure that NORA continues to make a difference in protecting worker safety and health.

*For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)*

*January 2004*

## NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM

### WHAT IS THE PUBLIC HEALTH ISSUE?

Effective infectious disease surveillance systems provide baseline information regarding the number of cases, trends, and geographic distribution of recognized diseases or conditions. For healthcare professionals to prevent and control the spread of certain diseases, notifiable disease surveillance systems that provide regular, frequent, and timely information regarding individual cases are necessary. Similarly, quick detection of new or re-emerging public health threats, whether naturally occurring or resulting from terrorism, is critical. All states have laws regarding collecting and reporting of certain infectious diseases. Since 1961, CDC has provided support for the tracking of notifiable diseases through the National Notifiable Disease Surveillance System (NNDSS). Working together, state agencies and CDC determine which diseases should be nationally notifiable. Diseases can be added to the list as new pathogens emerge or be deleted as incidence declines. Currently, over 60 infectious diseases and conditions are nationally notifiable.

### WHAT HAS CDC ACCOMPLISHED?

NNDSS provides a critical framework for public health surveillance in the United States by supporting the development and dissemination of structured case definitions, reporting of core surveillance information describing disease cases, and developing standard surveillance protocols and policies. CDC publishes provisional nationally notifiable disease surveillance data every week in the *Morbidity and Mortality Weekly Report*. Recent accomplishments include

- Adding new diseases to NNDSS in 2003, including Severe Acute Respiratory Syndrome, coronavirus-associated disease, and smallpox vaccination adverse effects.
- Revising case definitions, which allow for standardized reporting throughout the United States of acute hepatitis C and Rocky Mountain spotted fever.
- Revising and implementing guidelines for determining the reporting jurisdiction for the disease case-patient.

### *Example of Program in Action*

In 2003, to enhance CDC's ability to detect previously unrecognized disease outbreaks in multi state NNDSS data, CDC began to systematically apply statistical aberration-detection methods regarding disease occurrences that are unusual and warrant public health investigation. The methods proved to be effective and the results of weekly analyses are being made available to state and CDC epidemiologists.

### WHAT ARE THE NEXT STEPS?

CDC plans to strengthen the ability of state and local public health departments to track and monitor national notifiable diseases by

- Using new information technologies, such as Internet reporting, to enhance CDC's ability to manage the increasing amount of health information.
- Exploring new computer-based technologies to help detect emerging public health threats.
- Improving the quality, completeness, and timeliness of national notifiable disease surveillance data through surveillance assessment and technical assistance.

For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)

January 2004

## NATIONAL HEALTH CARE SURVEY

### WHAT IS THE PUBLIC HEALTH ISSUE?

The organization and financing of America's healthcare system have a profound effect on healthcare delivery and the ways patients access and receive health services. Data on trends in healthcare use are needed to inform policymakers and healthcare administrators about future demand for clinical and preventive services and the nation's need for healthcare providers. Information about what types of services are delivered and how they are delivered is critical for evaluating quality of care and appropriate use of clinical services, diffusion of new technologies, patient safety, and clinical outcomes. An understanding of how patients enter the healthcare system is necessary to shed light on healthcare disparities and the ability of the system to provide services to the most vulnerable populations through an effective healthcare safety net.

### WHAT HAS CDC ACCOMPLISHED?

The National Health Care Survey (NHCS) is a family of surveys that collects data from healthcare establishments about the use of services across the major sectors of the U.S. healthcare system. These data may be used to profile changes in the use of healthcare resources, patterns of disease, and the impact of new medications and technologies. Information on the characteristics of providers, facilities, and patients allows researchers to study shifts in the delivery of care across the healthcare system, variations in treatment patterns, and patient outcomes.

#### *Examples of Program in Action*

- Between 1992 and 2002, visits to office-based physicians became more complex due to increases in patient age, more diagnoses per visit, and a rise in the number of patients with multiple medications to manage. Data from NHCS show that the total visit rate for patients age 45 and over increased 14% during this time period.
- In 2002, the visit rate to office-based physicians by white persons was significantly higher than for African-Americans persons or Asians (334.6 visits per 100 persons compared to 252.9 and 229.3 visits, respectively). In contrast, African Americans had a considerably higher rate of use for hospital emergency departments. NHCS data for 2002 shows the use rate of emergency departments for African Americans (70.3 per 100 persons) to be significantly higher than for whites (35.7 per 100 persons) and 2.5 times higher than that of Asians (18.9 per 100 persons).
- Average length of hospital stay has been declining steadily and was significantly shorter in 2002 than in 1970 (4.9 compared with 7.8 days). Data from NHCS show that declines are pronounced for older age groups. For example, while for 15 to 44 year olds the average stay in 2002 was 2 days shorter than in 1970, for 45 to 64 year olds the average declined 4.3 days. For those aged 65 and over, average length of stay for hospitalizations was less than half what it had been in 1970 (5.8 compared with 12.6 days).

### WHAT ARE THE NEXT STEPS?

- Ensure that the component surveys of NHCS are conducted on a regular basis so that complete data on the healthcare system can be obtained to document shifts in the use of services between settings, the use of emerging healthcare settings, and services (such as ambulatory surgery centers, specialty hospitals and complementary and alternative medicine).
- Expand the sample sizes in various surveys to more accurately monitor disparities in healthcare among priority populations such as racial and ethnic minorities, women, people in rural communities, and children.
- Increase the usefulness of provider-based data to monitor and assess quality of care by providing national benchmark data for comparison with state and local performance. Data collection forms and sampling frames can be adapted to address quality of care issues and information can be linked to data on provider characteristics.

*For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)*

*January 2004*

## NATIONAL HEALTH INTERVIEW SURVEY

### WHAT IS THE PUBLIC HEALTH ISSUE?

Health policymakers, public health program managers, researchers, educators, the media, and the public need timely population health data to guide their decision making.

### WHAT HAS CDC ACCOMPLISHED?

CDC's National Health Interview Survey (NHIS) is a major source of information on the health status of the nation. The information is collected through confidential household interviews including more than 100,000 persons each year. NHIS interviewers collect information on topics such as health status and disability; insurance coverage; access to care; use of health services; immunizations; health behaviors; injury; and ability to perform daily activities. Additional topics addressed in the 2002 NHIS include alternative medicine; arthritis; disability and secondary conditions; environmental health; vision; and hearing. The data are used by health agencies and organizations, government agencies, academic institutions, and individuals to plan and monitor health policies and programs.

The production cycle of NHIS has shortened substantially. In 2001, the Early Release Program began to publish NHIS estimates of selected key health measures on the Internet. Selected data estimates are based on full- or partial-year data and released quarterly in March, June, September, and December. NHIS also collects supplemental data on specific topics. For example, in 2002, the supplements to the survey collected information for *Healthy People 2010*, Complementary and Alternative Medicine, and children's mental health. In 2003, *Healthy People 2010* and children's mental health will be addressed again.

#### *Example of Program in Action*

NHIS data are used widely to characterize persons' health status and access to healthcare. In 2001, NHIS data showed an increasing number in American children having health insurance coverage. The percentage of children without insurance fell from 13.9% in 1977 to 10.8% in 2001. Health insurance coverage has increased generally as well; the percentage of Americans without health insurance fell from 15.4% in 1997 to 14.1% in 2001. Persons with health insurance are more likely to have access to care and be able to identify a regular source of care, which is key to receiving preventive services and timely treatment of illness and injury.

### WHAT ARE THE NEXT STEPS?

- Increase the value of NHIS data to users by identifying the sample for household surveys for the period 2005–2014 to reflect changing demographics, and redesign the sample to allow for greater racial/ethnic detail.
- Improve the timeliness of data for users. NHIS will overhaul the systems through which data are collected, processed, and made available to users. This process includes conversion to an advanced computer-assisted personal interview system and use of relational databases.

## NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY

### WHAT IS THE PUBLIC HEALTH ISSUE?

Public health professionals and policymakers require accurate and current statistical data. This information is used to account for illness and disability among populations in the United States. To be most effective, the data collected should monitor trends in medical conditions, risk behaviors, risk factors, health habits, environmental exposures, and emerging public health issues and technologies.

### WHAT HAS CDC ACCOMPLISHED?

CDC conducts the National Health and Nutrition Examination Survey (NHANES), the only national source of objectively measured health data capable of providing accurate estimates of both diagnosed and undiagnosed medical conditions in the population. NHANES represents a unique collaboration between CDC, the National Institutes of Health, and others to obtain data for biomedical research, public health, tracking health indicators, and policy development. Through physical examinations, clinical and laboratory tests, and interviews, NHANES assesses the health status of adults and children throughout the United States. Mobile examination centers travel across the nation, collecting data on chronic conditions, nutritional status, medical risk factors (e.g., high-cholesterol level, obesity, high blood pressure), dental health, vision, illicit drug use, blood lead levels, food safety, and other factors that are impossible to assess by use of interviews alone. Findings from this survey are essential for determining rates of major diseases and health conditions (e.g., cardiovascular disease, diabetes, obesity, infectious diseases) and developing public health policies and prevention interventions.

#### *Example of Program in Action*

NHANES data provided the first sign that the nation's effort to fortify foods with folic acid to prevent birth defects was succeeding. Data from the 1999–2000 NHANES showed a tripling of the average level of folic acid in the blood compared with previous surveys. Increased folate levels from food fortification have the potential to reduce a woman's risk of giving birth to a baby with a birth defect of the spine or brain (spina bifida or anencephaly).

### WHAT ARE THE NEXT STEPS?

- Ensure that NHANES field operations are fully supported to maintain the overall sample size of NHANES.
- Implement the Community Health and Nutrition and Examination Survey to provide flexible and timely access to quality examination and laboratory data for defined populations that cannot be addressed by use of the standard NHANES framework.

## NATIONAL VITAL STATISTICS SYSTEM

### WHAT IS THE PUBLIC HEALTH ISSUE?

Policymakers and program managers need information from vital records such as birth and death statistics to develop policy and direct public health programs. The National Vital Statistics System (NVSS) is the primary source of this information, producing the nation's official vital statistics. The collection and registration of vital events are governed by the laws of 57 states and registration areas. Vital records and reports originate with hospitals, physicians, and funeral directors. Records are then compiled by the states and forwarded to CDC, which works with the states to ensure consistency in certificate content, data quality, and timeliness of reporting.

### WHAT HAS CDC ACCOMPLISHED?

NVSS compiles data on issues of public health concern, such as the number of teen births, prenatal care and birth weight, risk factors for adverse pregnancy outcomes, infant mortality rates, leading causes of death, life expectancy, and firearm-related mortality. This information is then provided in a timely manner to public health officials at the national, state, and local levels, as well as to interested private sector groups.

#### *Examples of Program in Action*

NVSS has compiled the following data from national vital statistics:

- The teen birth rate declined by 30% over the past decade, from 61.8 births per 1,000 teens 15 to 19 years of age in 1991 to 43.0 in 2002.
- The data show a reduction in deaths due to heart disease (3.8%) and cancer (1.8%) from 2000 to 2001. These two diseases account for more than 1.2 million deaths, more than half of all deaths in 2001.
- Life expectancy at birth for white males was 75.0 years, and 68.6 for black males in 2001.
- The infant mortality rate for all races has declined from 9.2 infant deaths per 1,000 live births in 1990, to 6.8 in 2001.

### WHAT ARE THE NEXT STEPS?

To address 21st century data-needs with 21st century technology, CDC plans to invest in fundamental improvements in the nation's vital statistics system. These improvements will include

- Implementing new national model certificates of birth, death, and fetal death events to improve data quality and update the content of these data sources to reflect new needs such as changing classification of race/ethnicity, and new and emerging concerns in maternal and infant health and public health.
- Developing, in partnership with states, the National Association of Public Health Statistics and Information Systems, and the Social Security Administration, standard specifications for a re-engineered vital statistics system that harmonizes with the Public Health Information Network. This process involves the initial recording of birth, death, and fetal death records via electronic systems in hospitals and funeral homes using standardized guidelines developed by CDC's National Center for Health Statistics (NCHS); transmission to state authorities and NCHS; and translation into information systems for statistical analyses and public health surveillance.

## PREVENTION EFFECTIVENESS PROGRAM

### WHAT IS THE PUBLIC HEALTH ISSUE?

- Prevention Effectiveness (PE) is the systematic assessment of the effect of public health policies, programs, and practices on health outcomes and costs.
- Policy and programmatic decisions are based on sound economic information. PE studies are able to supply this necessary information. PE directly contributes to fiscal accountability and stewardship of public funds by providing sound economic analysis.

### WHAT HAS CDC ACCOMPLISHED?

The three cornerstones of the PE program include training, technical assistance, methods development, and the systematic review of economic evaluations. The program accomplishments relate to these cornerstones:

- In 1995, CDC established a PE Fellowship Program. This 2-year post-doctoral program for economists, health services researchers, industrial engineers, and other scientists, concentrates on applied studies in public health economics and decision-making.
- Each year, about 145 CDC staff and Epidemic Intelligence Service officers attend PE methods courses.
- CDC continues to conduct collaborative research on consumer demand for food safety with the University of Maine, Ohio State University, and the University of Maryland.
- The fellowship has allowed CDC to produce more than 200 studies on PE, economic evaluation, and program evaluation on the costs of West Nile virus outbreak and response to immunization of healthcare workers for smallpox.
- The program has completed Volume I of the Web-based Economic Evaluation Course.
- CDC published *Prevention Effectiveness: A Guide to Decision Analysis and Economic Evaluation* in 1996, and the second edition in 2003. This book is used as a primer in the CDC PE course and also has extensive appeal to the larger health and public health communities.
- About 40 reviews of economic evaluations of interventions recommended by the Task Force on Community Preventive Services have been completed by the program.

### WHAT ARE THE NEXT STEPS?

Broadening the scope of economics at CDC will assist in

- Addressing the economics of information.
- Offering better support to the public health infrastructure.
- Improving standard setting and regulations.
- Establishing networks and system properties.
- Assisting the government in preparing and responding to infectious diseases or catastrophic risks, and applying what is learned to develop a new discipline: Public Health Economics.

## PUBLIC HEALTH INFORMATICS

### WHAT IS THE PUBLIC HEALTH ISSUE?

Dramatic changes in information technology motivated public health professionals to realize that technology is essential to public health practice. To design and use information technology effectively, the nation's public health workforce must have the skills necessary to meet this challenge. Training to improve public health capacity in the areas of information technology and infrastructure development is necessary to improve the health of the nation. There is a great need for professionals to bridge the information, computer, and public health sciences. Such training is critical to the development of processes and tools to improve the sharing of data, information, and knowledge. To meet this need, public health professionals require training in public health informatics, which is the systematic application of information and computer science and technology to public health practice, research, and learning. Public health informatics combines information and computer sciences, optimizing the use of information technology to achieve the mission and objectives of public health.

### WHAT HAS CDC ACCOMPLISHED?

CDC's public health informaticians have played a critical role in enhancing public health's informatics, information technology, and information infrastructure capacity. In addition to providing informatics technical assistance for information technology infrastructure development, CDC has been at the forefront of training public health informatics professionals to respond to informatics-related challenges and initiatives. Since 1996, CDC has trained public health informaticians to fill the need for this category of very specialized public health worker. Extensive training in new and emerging technologies (computers, servers, internal working and programming of computers and other equipment), cutting-edge informatics issues (metadata and electronic data transfer), and public health programs (infectious and chronic diseases, prevention programs, HIV/AIDS) prepares these professionals for the future of public health. Continuing this leadership role, CDC has established a 2-year Public Health Informatics Fellowship Program (PHIFP) which provides training and experience for qualified fellows to effectively apply computer and information science and technology to real public health problems, including the ability to lead and manage all aspects of the design, development, and implementation of public health information systems.

### WHAT ARE THE NEXT STEPS?

CDC seeks to further strengthen the training of public health professionals in informatics by

- Developing strong partnerships with universities and state, local, and other health agencies to train the current and future public health workforce in relevant informatics principles and methods.
- Continuing the evolution of informatics core curriculum and researching public health informatics competencies.
- Developing strong integrated public health information systems.
- Increasing the number of fellows in the PHIFP.
- Continuing to identify and address new and emerging issues in public health informatics.
- Improving dissemination of information about public health informatics and the role of informaticians in public health.

*For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)*

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## TOXICOLOGICAL PROFILES

### WHAT IS THE PUBLIC HEALTH ISSUE?

- The American Chemistry Council estimates that more than 75,000 chemical substances are used in commerce.
- The Agency for Toxic Substances and Disease Registry (ATSDR) has produced about 160 toxicological profiles that cover about 800 substances.
- ATSDR focuses on 275 substances that are considered the most hazardous to human health. Thousands of potentially toxic mixtures can be derived from these chemicals.

### WHAT HAS ATSDR ACCOMPLISHED?

ATSDR produces toxicological profiles for hazardous substances found at National Priorities List (NPL) sites (i.e., sites targeted for clean-up by the Environmental Protection Agency [EPA]). When deciding which substances to profile, ATSDR, EPA and the National Institute for Environment Health Sciences use criteria including the rank by frequency of occurrence at NPL sites or in emergency response situations, relative toxicity, likelihood of human exposure to the substance, and calculation of the number of people actually or potentially exposed.

Each profile succinctly characterizes the toxicologic and adverse health effects information for the hazardous substance it describes. In each toxicological profile document, ATSDR interprets all known information about the substance and reports on how these substances can affect the health of an exposed person. The profiles also identify substantial gaps in knowledge about a specific substance and serve to initiate further research when needed.

The profile is a detailed document, but is not designed to be exhaustive. Each profile includes references to more comprehensive sources of specialty information. In 2002, ATSDR released *ATSDR ToxProfiles 2002™*, which contained 159 toxicological profiles on CD-ROM. Toxicological profiles are also available on the ATSDR Internet website at [www.atsdr.cdc.gov/toxpro2.html](http://www.atsdr.cdc.gov/toxpro2.html). ATSDR also produces ToxFAQs™ to provide easy-to-understand toxicologic information to the public. These are available in print (in English and Spanish) and on the Internet.

### WHAT ARE THE NEXT STEPS?

New research, new interpretations of existing research, and filling of data gaps are among the events that lead to an update of a toxicological profile. New profiles also are developed as needed. Information about how exposure to toxins affects children is being added to the profiles. ATSDR is also developing interaction profiles, which contain information about common mixtures of hazardous substances.

## URBAN RESEARCH CENTERS

### WHAT IS THE PUBLIC HEALTH ISSUE?

- The urban disadvantaged are predominantly minorities. They bear a disproportionate burden of the nation's health problems (e.g. HIV infection, tuberculosis, violence, drug use).
- Evidence demonstrates that health is substantially influenced by social factors (e.g. income, education, discrimination, community characteristics), especially at the community level.
- Research is needed to develop intervention models that involve the community to produce effective, sustainable improvements in urban health and quality of life.

### WHAT HAS CDC ACCOMPLISHED?

The Urban Research Centers (URCs) have been funded since 1995 to assess and improve the health of urban communities. Located in Detroit, New York City, and Seattle, URCs use an approach called community-based participatory research to engage government, academic, private, and community organizations as partners in priority setting and designing, implementing, and evaluating community focused public health interventions. Accomplishments include the following:

- The Seattle URC conducted basic assessment research in the context of domestic violence (DV) in nine ethnic and cultural communities. The follow-up intervention project resulted in the development of a social support group intervention, and increased community-based agency capacity in intervention design, safety, and referral protocols, and evaluation. Preliminary findings indicate that support group participation is strongly associated with reduced DV incidence, DV frequency, and perceived stress. Increased social support increased knowledge regarding where to go for help, and participants' ability to perform daily living skills.
- In the Detroit URC, the East Side Village Health Worker Partnership implemented a neighborhood-level intervention by lay health workers to reduce specific environmental, economic, and social stressors in a poor African-American community. Lay health workers are trained to use local resources to achieve such community health goals as improving access to healthy foods, establishing better relationships with local police, and exerting greater influence on city government officials to eliminate environmental toxins.
- The New York URC developed a *Survival Guide* in response to the need for interventions to help substance users and their families deal with the problems and consequences of drug abuse, and to build community support for services. The *Survival Guide* includes health information and how to navigate the system to obtain services; a comprehensive list of service providers; and relevant hotline numbers. Dissemination and evaluation of the guide will continue to involve substance users, community service providers, and academics.

### WHAT ARE THE NEXT STEPS?

In an effort to apply the URC model to a bi-national setting, a URC in El Paso was established in July 2002 through collaboration between the Paso Del Norte Health Foundation, the CDC Foundation, and CDC. An advisory board consisting of partners from both sides of the U.S.-Mexico border has been established and has identified environmental health and physical activity as priority health concerns.

For additional information on this or other CDC programs, visit [www.cdc.gov/program](http://www.cdc.gov/program)

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